Cal/EPA

Department of Toxic Substances Control

700 Heinz Avenue, Bldg. F, Suite 200 Berkeley, CA 94710

April 15, 1998

Pete Wilson
Governor

Peter M. Rooney
Secretary for Environmental Protection

Commanding Officer
Engineering Field Activity, West
Naval Facilities Engineering Command
Attn: Ms. Patricia McFadden, Code 612
900 Commodore Drive
San Bruno, CA 94066-2402

DRAFT OPERABLE UNIT 1 REMEDIAL INVESTIGATION REPORT, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Ms. McFadden:

The Department of Toxic Substances Control has reviewed the Draft Operable Unit 1 Remedial Investigation Report for Alameda Point. We find that this document is inadequate for providing the results of the field investigations and baseline risk assessment. While the report represents a significant body of information resulting from a great deal of hard work on the part of its project managers and consultants, the information has not been compiled or presented in an accessible manner. Data should be presented in the form of tables, graphs, maps, and cross sections, with a brief narrative that is plainly supported by the graphical presentations.

DTSC requests that the Navy submit a revised Draft OU1 RI Report which adequately addresses site characterization (including data presentation and analysis; nature and extent of contamination; and contaminant fate and transport) as well as human health and ecological risk assessment.

Specific comments regarding the Basewide Site Description and the Human Health Risk assessment are enclosed. If you have any questions regarding this letter, please contact me at (510)540-3814.

Sincerely,

Mary Rose Cassa

Mary Rose Cassa, R.G.
Engineering Geologist
Office of Military Facilities

enclosures

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DEPARTMENT OF TOXIC SUBSTANCES CONTROL COMMENTS
DRAFT OPERABLE UNIT 1 REMEDIAL INVESTIGATION REPORT, ALAMEDA POINT, ALAMEDA, CALIFORNIA

General Comments

1. Please verify and correct all units for reported concentrations. Poor quality control in this respect casts doubt on all information and conclusions presented in this report.

2. Maps depicting the extent of contamination in the vadose zone and groundwater ("plume maps") must be prepared for the revised draft RI report. Based on these maps, it may be necessary for the Navy to revise the boundaries for the IR sites. A "site" is defined as "the area consisting of the aggregation of sources, the areas between sources, and areas that may have been contaminated due to migration from sources; site boundaries are independent of property [cultural] boundaries" (U.S. EPA Guidance for Performing Site Inspections Under CERCLA, 1992).

3. Please provide specific information regarding concentrations for various contaminants. Qualitative phrases such as "low concentrations" or lists of "detected" chemicals without specific concentrations are useless in evaluating the nature and extent of contamination for the remedial investigation.

4. Please include all relevant information about containers for potential sources of contaminants. For example, at Site 3, a total of five tanks is referenced, but the related map does not differentiate between concrete and steel, and does not indicate the order in which the tanks were taken out of service.

5. Please address all hydrogeologic parameters for each site. For example, the text states, "No data was available to estimate the hydraulic conductivity . . . beneath Site 3." This lack of data leads to an unacceptably incomplete remedial investigation report.

6. Please show all locations for all relevant investigation data on maps. Separate maps may be used if data are so abundant that display is difficult. For example, at Site 3, eighteen observation wells were installed in 1980 or

earlier. These well locations should be shown on maps, and the data should be considered for inclusion in the RI.

7. Please address the presence or absence of free product at all sites where petroleum hydrocarbons are present. If free product is present, source removal must commence immediately

8. Inorganic chemicals in soil and groundwater must be completely evaluated before arriving at a conclusion that inorganic chemicals are ubiquitous and, therefore, not considered associated with site activities. Please refer to the DTSC guidance document, "Selecting Inorganic Constituents as Chemicals of Potential Concern in Risk Assessments at Hazardous Waste Sites and Permitted Facilities (February, 1997)." Furthermore, the "inherent immobility of inorganic chemicals" depends on pH to a large extent. It is inappropriate to make this assumption without presenting supporting information.

9. Site Maps: The basic site maps are detailed and visually appealing. They convey a wealth of relevant cultural information. Please consider generating simplified maps that are better suited to display and interpretation of specific site-related RI data. The detailed cultural map may be used as a reference to aid interpretation of the site-related data. Site maps must also include all data from adjacent sites. It is unrealistic to assume that each site stands alone, without influence from outside the arbitrary site boundaries. Please also consider including an index map for each site map showing its location with respect to Alameda Point as a whole.

10. Cross Sections: The orientation of some cross sections (e.g., Site 3, Figure 6-1c) does not seem to be meaningful for the purposes of depicting and interpreting site hydrogeology. Ideally, cross sections should represent down-gradient and cross-gradient orientations. Please revise where possible.

11. Please update site information using current EBS data. For example, at Site 6, "During a 1988 visit, approximately 30 drums were located directly west of [Building 41]." What has happened to these drums in the intervening ten years? What are current conditions at the site?

12. This report contains many statements to the effect that "no information is available" about various tank removals, tank sizes, disposition of various hazardous materials, etc. Please develop a general statement to explain why so much of this information is "not available." Was there a fire in a document archive? Were records poorly kept during a certain period for a specific reason? Without this information, it appears that the explanation is more likely that the information was simply not found through lack of diligence.

13. Please provide a better inventory of all tanks, sizes, dates removed, and relevant comments. This can be summarized in a table.

14. Please develop a list of fuels, solvents, and other materials (such as PD680 cleaner, for example) and their constituents so that potential sources and releases of specific chemicals can be evaluated.

15. Please provide representative chromatograms ("fingerprints") for each class of TPH compounds or product for each site. For example, at Site 12, please provide an example of TPH (other heavy components).

16. Fence diagrams are a nice addition (e.g., Figure 6-7b), but their construction hides some of the data. Please consider including views of the hidden portions of fence diagrams.

17. For buildings where radioactive sources were stored or used, the Navy must determine if closeout by the Radiological Affairs Support Office (RASO) is required.

18. Please use the word "areal" to refer to a space or surface, not "aerial" which pertains to the air or atmosphere.

Specific Comments

1. Site 3: Please provide more information about the concrete tanks that were "reportedly destroyed and buried in place." For example, does geophysical data support this conclusion? Was demolition debris encountered when borings were made? Were geophysical methods used to search for underground lines?

2. Site 3: Please provide more information about the reported high fuel vapors in "the building located immediately north of Site 3." Please identify the building by number and name (if named). Please explain what method was used to rid the building (or buildings) of "high fuel vapors." Are fuel vapors at any concentration still present?

3. Site 3: Please evaluate the source of lead. A concentration of 2,380 mg/kg cannot be left uninvestigated.

4. Site 11: Please provide better information regarding locations of fuel lines and "potential abandoned USTs." Geophysical methods should be used to resolve these questions.

5. Site 11: Figure 6-6a has a label for "Underground Fuel Tank Farm" south of Building 14, yet tanks are depicted to the west of this location, and the row of tanks appears to run off the map. Please clearly indicate the locations of tanks which stored fuel used in Building 14.

6. Site 14: Please include information about the sampling conducted in early 1998 and plans for incorporating this information into the RI report.

7. Site 15: Please state when Buildings 301 and 389 were demolished, and what was done with the demolition debris.

8. Site 15: Because a removal action has already taken place, the post-removal action conditions should be presented here; namely, a summary of the removal action completion report and confirmation sampling results. The text states, "Only the samples collected in the area outside of the excavation are reported . . ." These samples should be designated with a different symbol on Figure 6-9a.

9. Site 15: The metals concentrations in soil near the Oakland Inner Harbor cannot be attributed to naturally occurring conditions. This contamination must be addressed further.

10. Site 16: This site characterization must be updated with the results of the removal action conducted in 1997. Please show the excavation areas on the site map.

11. Site 22: Please indicate the locations of the tanks and

associated piping on the site map.

12. Site 22: Please re-print Figure 6-11b. Much of the detail is missing.

13. Site 23: The introduction states, "No information was available regarding site usage of the area," yet later states, "The detection of TPH [and] in soil samples is probably a result of the historical refinery operations." Please correct this discrepancy.

CalEPA

Department of Toxic Substances Control

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MEMORANDUM

Pete Wilson Governor

Peter M. Rooney Secretary for Environmental Protection

TO: Mary Rose Cassa, Project Manager
Office of Military Facilities - Berkeley
700 Heinz, Building F, 2nd Floor
Berkeley, CA 94710

FROM: James M. Polisini, Ph.D.
Staff Toxicologist
Human and Ecological Risk Division (HERD)

DATE: April 6, 1998

SUBJECT: ALAMEDA POINT (NAVAL AIR STATION ALAMEDA)
DRAFT OPERABLE UNIT (OU) 1 REMEDIAL INVESTIGATION REPORT
[PCA 14740 SITE 200004-47]

Background

We have reviewed the draft document titled, OU1 Remedial Investigation Report Draft, Alameda Point, Alameda, California, dated February 10, 1998. This draft RI Report was prepared by Tetra Tech EM Inc. of Rancho Cordova, California. This review is in response to your written work request.

The details of the human health risk assessment are presented in Appendix D, Volume IV of IV. This review focuses on that appendix.

General Comments

We disagree with some of the methodology used to assess the human health risk of these OU1 sites. In some instances the methodology used directly conflicts with previous discussions between HERD and representatives of the Navy:

1. Projected future land use is used as a guide in selecting the exposure scenarios for each site (Section D.3.2, page 5). As a result a future residential use scenario is not evaluated for all sites. HERD recommends that future residential use scenarios be included for all sites at closing military bases. In the event risk management decisions are based on occupational or recreational scenarios, future land use for the site must be restricted. A deed restriction or some legal document of equivalent standing should be placed on those sites where a future residential land use scenario is not evaluated. These sites are Site 3 (recreation only), Site 12 (occupational, recreational and construction worker), Site 14 (occupational, recreational and construction worker), Site 15 (occupational, recreational, construction worker), Site 16 (occupational, recreational, construction worker), Site 22 (occupational, recreational, construction worker), and 23 (occupational, recreational, construction worker).
2. HERD and U.S. EPA Region IX representatives proposed that sampling data from the Environmental Baseline Survey (EBS) program be utilized in NAS Alameda risk assessments. It was our understanding that the Navy and Navy contractors would

evaluate the suitability of the EBS data for inclusion in NAS Alameda risk assessments. Installation Restoration Program (IRP) soil samples are the only soil samples utilized for the OU1 human health risk assessment. The basis for excluding the EBS data is that it is field screening data. At least a portion of the EBS data, however, is Contract Laboratory Program (CLP) data. The EBS data which is CLP data should be included for use in the OU1 risk assessment.

3. The soils evaluated in the future residential use scenario for direct contact exposure pathways are soils from the surface to two feet below the surface. Soils evaluated in the future construction worker scenario are surface to 10 feet or surface to groundwater where the depth to groundwater is less than 10 feet. HERD specifically directed, and the Navy and Navy contractors agreed, that direct soil exposure pathways for residential use scenarios would incorporate contaminants of concern (COCs) in soils from the surface to 10 feet or surface to groundwater where the depth to groundwater was less than 10 feet.
4. U.S. EPA Region IX Preliminary Remediation Goals (PRGs) are used, together with frequency of detection, to eliminate potential inorganic and organic COCs. EPA PRGs are meant to screen sites not COCs. Screening inorganic COCs with PRGs directly contradicts the PRG guidance provided by HERD in the October 24, 1994 memorandum. Even if HERD were to agree that the EPA PRGs could be used as some measure of the probability of human health impacts associated with a potential COC, the degree to which the PRG exceeds the concentration of the potential COC is critical. A potential COC that is present at 0.01 of the EPA PRG certainly presents a different potential threat than a potential COC present at 0.7 of the EPA PRG. Additional criteria for evaluating potential inorganic COCs, such as historical site use, concentration, mobility, persistence and bioaccumulation are mentioned in Volume I (Section 5.1.2, page 5-4) but do not appear to be implemented.
5. Groundwater exposure pathways, with the exception of exposure to emissions of volatile organic compounds (VOCs) in groundwater into indoor air, are presented separately, and not included with the other residential use scenario exposure pathways. In addition, groundwater exposure via direct ingestion and dermal exposure are the only pathways presented in the separate groundwater evaluation. Exposure via inhalation of VOCs during showering, cooking or washing dishes is not included. Few homes are plumbed with a water supply for showers or cooking separate from the drinking water supply.
6. Groundwater concentrations of COCs are limited to the last 4 quarters of groundwater data. Are the results of these quarters significantly different from the preceding groundwater monitoring? Please indicate the rationale for selecting the last 4 quarters of groundwater data.
7. The Navy and Navy contractors implemented their interpretation of a section of the California Public Resources Code, as precluding residential use within 1000 yards of the coast, despite notification that DTSC did not agree with that interpretation. This notification was contained in a HERD memorandum to Tom Lanphar, Project Manager dated July 15, 1997. The specific comment was:

   > DTSC legal counsel does not agree that the code section provided for exclusion of residential development within 1000 yards of the coast (Cal. Pub. Res. Code Section 30103, Section 4.2, page 21) is applicable. This section defines the coastal zone and specifically excludes land under the jurisdiction of the San Francisco Bay Conservation and Development Commission. Do not use this criteria as a basis for excluding the residential use scenario for any portions of NAS Alameda.

8. Imprecise qualitative statements are made regarding the comparison of site-specific concentrations to 'background' concentrations. This comparison is outlined as a 'hot spot' comparison of the maximum concentration followed by a statistical test of the

site-specific data set against the 'background' data set for those potential inorganic COCs which fail the 'hot spot' comparison (Section D.4, page 12). The assessment of several sites contains discussion of being within the range of background as if this is a third type of comparison. HERD agreed to no such qualitative comparison. Statements such as the maximum concentrations '...were not sufficiently high to cause the mean concentrations of the site and background to appear dissimilar' are impossible to interpret. If this phrase is a reference to the statistical comparison it should be amended to clearly reference a specific statistical test.

9. Ingestion of homegrown produce and fruits is not considered for the future residential use scenario. What method would the Navy implement to preclude planting and consumption of homegrown vegetables and fruit?

The DTSC risk manager should be aware that the listings of risk drivers, in terms of percent contribution, in the summary tables for each site scenario are the percent contribution under the U.S. EPA reasonable maximum exposure (RME) scenarios, not the DTSC RME percent contribution.

DTSC incremental risk and non-cancer hazard calculations were checked at random in Appendix D. The CalEPA cancer slope factors from the Office of Environmental Health Hazard Assessment (OEHHA) were correctly included in all calculations checked. The estimates of incremental risk and non-cancer hazard were arithmetically correct in all calculations checked.

Specific Comments Appendix D

1. We agree that soil and groundwater are the media of concern for OU1 because the OU1 sites are relatively small and surface water and sediment are not contained within the OU1 site boundaries (Section D.5.1, page 23). This should not be construed to mean that HERD does not require evaluation of the fish and/or shellfish ingestion pathway for other operable units. We have discussed this issue at length with the Navy and Navy contractors and will require that this exposure pathway be evaluated.

2. The RI Report correctly states that DTSC generally requires a residential use scenario be evaluated (Section D.5.1, page 24). There are nevertheless, sites in OU1 for which a future residential use scenario is not evaluated. HERD recommends that future residential use scenarios be included for all sites at closing military bases. In the event risk management decisions are based on occupational or recreational scenarios, future land use for the site must be restricted. A deed restriction, or legal document of equivalent strength, should be placed on sites where future residential use is not evaluated to prevent future residential land use as well as some commercial land uses such as day care centers, where particularly sensitive sub-populations may be exposed.

3. DTSC does not subscribe to the interpretation of the section of the California Public Resource Code (Section 30103) cited as precluding residential land use within 1000 yards of the coast (Section D.5.1, page 24). This DTSC position has been previously transmitted to the Navy. HERD will agree to the imposition of a deed restriction precluding future residential and certain commercial uses for these sites if the Navy wishes to not evaluate the future residential use scenario.

4. A sampling depth for soil of surface to 2 feet was used to set the residential use scenario exposure point concentration for soil (Section D.5.3, page 26). This is in

direct contradiction to the Navy agreement that the soil sampling depth for the residential use would be surface to 10 feet or surface to groundwater where the depth to groundwater was less than 10 feet.

5. An attenuation factor of $1x10^5$ from the Lawrence Berkeley Laboratory investigation at NAS Alameda is used in estimating VOC concentrations in buildings from soil gas (Section D.5.4, page 28) using the Johnson and Ettinger model. The Johnson and Ettinger publication specifically states that soil parameters may vary over the size of a residential lot, resulting in inaccuracies in predicted indoor air concentrations.

6. Intake from homegrown produce and fruits is not included as an exposure pathway for the future residential use scenario (Figure D.5.2-1). Please explain the method by which ingestion of homegrown produce or fruits will be precluded.

7. The associated tables presenting the incremental cancer risk and non-cancer hazard for Site 3 were checked and the values presented in the text (Section D.7.1.4, page 112) agree with those presented in the tables.

8. It cannot be argued that arsenic and beryllium at Site 3 are 'within the background range' if these two COCs fail the 'hot spot' comparison and the statistical test (Section D.7.1.4, page 113). If it is the Navy's contention that the majority of the risk and/or hazard are due to 'background' concentrations with only a minimal increase due to site-related activities, state this contention clearly rather than relating a qualitative comparison of the range of concentrations.

9. Soil samples 'within and around the boundaries of Site 3' and ground water samples from Site 3 wells were apparently used to characterize the incremental cancer risk and non-cancer hazard for Site 6 (Section D.7.2.2, page 136). No rationale is provided for using Site 3 data to characterize Site 6. We do not agree that this is an adequate risk characterization of Site 6.

10. The discussion of Site 6 site-specific comparisons with 'background' is extremely difficult to follow (Section D.7.2.2, page 137). It does not appear from the text that the appropriate statistical test was applied to compare the Site 6 data set to the applicable 'background' data set. Rather, it appears that a simple comparison of the mean and the 95 percent upper confidence limit (95UCL) of the mean was made to the mean and 95UCL of the 'background' data set. This is not the methodology agreed to with the Navy nor is it the methodology presented (Figure D.4-2). The 'background' comparison for inorganic COCs should be performed as agreed upon. In addition, please amend the text, where applicable, to place the 'hot spot' comparison and the subsequent statistical test in the order in which they are actually performed. Comparison with a single metric such as the 95UCL is not a statistical test.

11. Incremental cancer risk and non-cancer hazard associated with exposure to groundwater in a residential setting are separated from exposure to soils (Section D.7.2.4, page 140). There appears to be no reason to separate these two exposure media, except the doubt regarding use of groundwater for domestic purposes. If groundwater is not a medium of exposure, except for emissions of VOCs from contaminated groundwater, this evaluation should be removed from the risk assessment.

12. The incremental cancer risk and non-cancer hazard values for Site 6 presented in the text (Section D.7.2.4, page 139 and 140) were checked against the appropriate tables and found to agree.

13. The word two is misspelled as 'tow' in the discussion of Site 7 (Section D.7.3.2, page 217, 7th line of text). The word were is misspelled as 'ere' in the last line of the same page. Please correct these typographic errors.

14. The discussion of inorganic COCs at Site 7 is, again, confusing (Section D.7.3.1, page 217). There appears to have been no statistical test of Site 7 concentrations against 'background' concentrations. Qualitative comparisons of the mean apparently indicated that the mean for Site 7 soils was 'similar' to the mean of background soils. This is not the methodology agreed to with the Navy nor is it the methodology presented (Figure D.4-2). The statistical comparison to 'background' for inorganic COCs should be performed as agreed upon.

15. Incremental cancer risk and non-cancer hazard associated with exposure to groundwater in a Site 7 residential setting are separated from exposure to soils (Section D.7.3.3, page 218). Please see specific comment number 11 above.

16. The San Francisco Regional Water Quality Control Board (SFRWQCB) 'ambient' sediment concentrations, currently being prepared for release, contain two values for some analytes depending on the grain size of the sediment. To which 'ambient' sediment value are the arsenic and chromium concentrations at Site 7 comparable (Section D.7.3.4, page 220)?

17. Incremental cancer risk and non-cancer hazard values presented in the text or Site 7 (Section D.7.3.4, page 219 and 220) agree with those in the associated tables.

18. The discussion of Site 8 soil COCs is confusing (Section D.7.4.2, page 341). There is a discussion of statistical tests of means, then a 'hot spot' analysis followed by a discussion of 'ranges of background' with Site 8 cadmium and silver concentrations only 'slightly outside' the background concentration range. Maximum concentrations of antimony, copper, manganese and zinc apparently exceed the background range, but are eliminated as COCs because the means were similar to background means and the difference in maximum concentrations is 'likely' due to soil composition variation. This is not the methodology agreed to with the Navy nor is it the methodology presented (Figure D.4-2). The statistical comparison to 'background' for inorganic COCs should be performed as agreed upon.

19. Eighteen potential COCs are listed as the final COCs for Site 8 (Section D.7.4.2, page 341). The following sentence states that 'The other chemicals detected in surface soils were retained as COCs. Perhaps this is a typographic error and the sentence should read 'not retained'.

20. Incremental cancer risk and non-cancer hazard values presented in the text or Site 8 (Section D.7.4.4, page 343 and 344) agree with those in the associated tables.

21. Incremental cancer risk and non-cancer hazard associated with exposure to groundwater in a Site 8 residential scenario are separated from exposure to soils (Section D.7.4.3, page 345). Please see specific comment number 11 above.

22. Maximum Site 9 soil concentrations of chromium and lead exceeded the background upper limit concentration, but chromium and lead were excluded based on a 'similarity' of mean values (Section D.7.5.2, page 432 and 433). The statistical comparison to 'background' for inorganic COCs should be performed as agreed upon to evaluate these two Site 9 potential COCs.

23. It cannot be argued that beryllium at Site 9 is 'actually present at background concentrations' if this COC fails the 'hot spot' comparison and the statistical test (Section D.7.5.4, page 434 and 435). If it is the Navy's contention that the majority of the risk and/or hazard are due to 'background' concentrations with only a minimal increase due to site-related activities, state this contention clearly rather than relating a qualitative comparison of the range of concentrations.

24. Incremental cancer risk and non-cancer hazard values presented in the text or Site 9 (Section D.7.5.4, page 434 and 435) agree with those in the associated tables.

25. Incremental cancer risk and non-cancer hazard associated with exposure to groundwater in a Site 9 residential scenario are separated from exposure to soils (Section D.7.5.4, page 435). Please see specific comment number 11 above.

26. It is impossible to evaluate whether statistical tests were applied to compare Site 22 soil concentrations to the soil 'background' data set (Section D.7.6.2, page 489). The concentration ranges of arsenic, barium, chromium, manganese, mercury and nickel at Site 11 are supposedly 'within background ranges'. Does this mean one of the statistical tests identified in the agreed-upon methodology was employed and the null hypothesis could not be rejected? The maximum concentrations of lead and copper were above the background ranges, but in the 'range of variability expected in a heterogeneous medium'. How was the appropriate range of variability derived for lead and copper? The statistical comparison to 'background' for inorganic COCs should be performed as agreed upon to evaluate the Site 11 potential COCs.

27. Incremental cancer risk and non-cancer hazard values presented in the text for Site 11 (Section D.7.6.4, page 490 and 491) agree with those in the associated tables.

28. The fact that multiple potential inorganic COCs at Site 12 are 'near or within' the range of background values (Section D.7.7.2, page 542 and 543) does not appear to follow the agreed-upon statistical testing for potential COCs which fail the 'hot spot' test. The statistical comparison to 'background' for inorganic COCs should be performed as agreed upon to evaluate the Site 12 potential COCs.

29. Chromium was excluded as a Site 14 soil COC based on the fact that the 'ranges are similar, and the maximum concentration of chromium at Site 14 is only slightly above the background maximum concentration' (Section D.7.8.2, page 593). The statistical comparison to 'background' for inorganic COCs should be performed as agreed upon to evaluate the Site 14 potential COCs.

30. The 'AVG' designator is missing from the sentence describing average exposure risk and hazard for the recreational scenario at Site 14 (Section D.7.8.4, page 596).

31. Incremental cancer risk and non-cancer hazard values presented in the text for Site 14 (Section D.7.8.4, page 595 and 596) agree with those in the associated tables.

32. Site 14 is mistakenly referenced in the discussion of Site 15 COCs (Section D.7.9.2, page 675, line 6). Please correct this typographic error.

33. The maximum values of aluminum, arsenic, cadmium, mercury and vanadium at Site 15 are above the 80LCL/95 background concentrations. All are excluded as Site 15 COCs based on the statement that the ranges are 'within background ranges' (Section D.7.9.2, page 675). The statistical comparison to 'background' for inorganic COCs should be performed as agreed upon to evaluate the Site 15 potential COCs.

34. The selection of inorganic COCs for Site 16 (Section D.7.10.2, page 748) again appears to rely on qualitative comparison of the ranges of concentration. The maximum concentration of arsenic is outside the 'background range' but not carried forward as a Site 16 COC based on the statement that the maximum is 'not significantly high to cause the mean concentrations of the site and background to appear dissimilar'. An appearance of similarity is not sufficient. The statistical comparison to 'background' for inorganic COCs should be performed as agreed upon to evaluate the Site 16 potential COCs.

35. Silver is not carried forward as a Site 16 soil COC (Section D.7.10.2, page 748) based on a 'low' frequency of detection. Silver was detected in soil in 5 of 98 samples. This frequency of detection in not less than 5 percent as proposed in the COC screening methodology. Site 16 was used as a scrap yard. It would seem reasonable that silver batteries may have be stored or disposed of at a military scrap yard. Silver should be retained as a Site 16 soil COC.

36. Incremental cancer risk and non-cancer hazard values presented in the text for Site 16 (Section D.7.10.4, page 749 and 750) agree with those in the associated tables.

37. The screening of inorganic COCs for Site 22 excludes arsenic, cobalt and cadmium in soil (Section D.7.11.2, page 809) based on the statement that the maxima were outside the background range, but not significantly high to cause the mean concentrations to appear dissimilar. The statistical comparison to 'background' for inorganic COCs should be performed as agreed upon to evaluate the Site 22 potential COCs.

38. U.S. EPA Region IX PRGs are used to screen organic soil contaminants and inorganic and organic groundwater contaminants from further consideration at Site 22 (Section D.7.11.2, page 810). This is an inappropriate use of PRGs which lowers the risk or hazard associated with these media. Please see general comment number three above. These potential COCs should be retained in the Site 22 risk assessment.

39. The fact that beryllium is elevated above Site 22 soil background by only 1 mg/kg at most (Section D.7.11.5, page 813) is true. However, the maximum is 2.5 times the upper limit soil background value (Table D.7.11-4) and the 95thUCL is 1.44 times the upper limit soil background value (Table D.7.11-1). The U.S. EPA Region IX industrial soil PRG for beryllium is 1.1 mg/kg.

40. Site 23 inorganic potential COCs were eliminated from surface soils based on background 'ranges', subsurface soil potential COCs were eliminated based on U.S. EPA Region IX PRGs, and groundwater potential COCs were retained only if above U.S. EPA Region IX PRGs (Section F.7.12.2, pages 889 and 890). We do not agree with this methodology.

41. Incremental cancer risk and non-cancer hazard values presented in the text for Site 23 (Section D.7.12.4, pages 891 and 892) agree with those in the associated tables. The section heading for this section is listed as 6.7.12.4. Please correct this typographic error.

42. The assessment of the hazard associated with soil and groundwater lead indicates that Site 22 may require a localized removal for the soil lead concentration of 9890 mg/kg (Section D.7.13, page 937).

43. The DTSC risk manager should independently decide whether OU1 sites with soil lead concentrations in excess of 130 mg/kg, but less than 400 mg/kg are candidates for no further action. These sites are Site 7, Site 16, Site 22 and Site 23 (Section D.7.13, page 937).

44. We do not agree that the probability locations at NAS Alameda close to the shoreline would become residential housing is quite small (Section D.8, page 945). This is an incorrect interpretation of the California Public Resources Code and should be removed from this document. Please see general comment number 6 above.

45. We agree that when a probabilistic risk assessment is conducted it is important to consider the range of risk values (Section D.8, page 947). When point estimates of risk are produced, however, EPA guidance calls for all remedial decisions to be based on the RME scenario.

Specific Comments Volume I

46. HERD has cautioned the Navy repeatedly that the 'ambient' polycyclic aromatic hydrocarbon (PAH) concentrations for sediment in San Francisco Bay contained in the San Francisco Regional Water Quality Control Board order for the Shearwater site are draft values for San Francisco Bay sediments. The San Francisco Bay 'ambient' document is scheduled for imminent release. The San Francisco Bay 'ambient' values contained in that document are significantly lower than the 5.13 mg/kg total PAH value cited in the RI Report (Section 2.6.1, page 2-24). In fact, the PAH 'ambient' value for high molecular weight, low molecular weight and total PAHs for sediments less than 40 percent fines is less than 1 mg/kg. These lower 'ambient' PAH values seriously undermine the Navy contention that PAH concentrations at NAS Alameda less than 5 mg/kg are representative of background due to the placement of San Francisco Bay sediments to construct NAS Alameda.

47. While ATSDR may have documented 'general background' PAH concentrations for urban soils may be 'as high as' 62 mg/kg for heavyweight PAHs and 166 mg/kg for lightweight PAHs (Section 2.6.1, page 2-24) these values are most probably from areas outside California where coal-fired power plants and domestic heating oil emissions elevate the PAH concentration in soil. In any event, it would be difficult for the Navy to argue that elevated soil PAH concentrations at NAS Alameda could not be significantly due to Navy activities such as operation of air plane engines, operation of maintenance vehicles and power generation. HERD does not agree that these ATSDR soil PAH values are applicable to NAS Alameda.

48. The SFRWQCB total dissolved solids (TDS) limit for sources of domestic water is 3000 mg/l, not 500 mg/l as cited (Section 2.7.1.2, page 2-28). This citation of 500 mg/l TDS is confusing as a 3000 mg/l TDS limit appears to be employed two pages

later (Section 2.7.2, page 2-30). Groundwater which was excluded from assessment in the future residential use scenario due to the erroneous 500 mg/l value for TDS must be reevaluated.

49. It is incorrect to state that U.S. EPA regional policy positions were incorporated in the human health risk assessment (Section 5.1.1, page 5-2). I personally attended NAS Alameda meetings where the direction provided by the U.S. EPA Region IX toxicologist was not taken.

50. It was our understanding that the Navy would evaluate the suitability of the EBS data for inclusion in the risk assessments at NAS Alameda. The EBS data is not included based on the statement that it is field or screening level data (Section 5.1.2, page 5-3). This criterion seems inappropriate given the Navy admits that 'in general' data included in the risk assessment were collected and analyzed in accordance with CLP procedures. Some of the EBS data was also CLP quality data and should be included in the risk assessments at NAS Alameda.

51. The 5 percent criterion for elimination of potential COCs (Section 5.1.2, page 5-4) in Risk Assessment Guidance for Superfund (RAGS) is provided as an example of the use of frequency of detection when the number of contaminants is unwieldy. The number of contaminants at OU1 sites does not appear unwieldy. Frequency of detection should not be used to reduce the number of potential COCs for the OU1 risk assessment.

52. The human health risk RME risk values presented in Volume I were compared with the risk values presented in Appendix D. All were in agreement except the occupational RME risk under EPA assumptions for Site 23 (Section 6.12.7.1, page 6-141). The RME occupational risk under EPA assumptions in Volume I is listed as 1.6E-06, while Appendix D (Section D.7.12.4, page 891 and Table D.7.12-20) list 6.0E-06. Please correct the text in Volume I.

Conclusions

We have some serious disagreements with the methodology as employed. If the statistical tests of site concentration to background concentration were not performed, as the text of Appendix D seems to indicate, the methodology developed for selection of inorganic COCs was not followed. The residential soil exposure point concentration was calculated in direct contradiction to guidance from HERD that the soil depth should be surface to 10 feet or surface to groundwater where the depth to groundwater is less than 10 feet. U.S. EPA PRGs are meant to screen sites not potential COCs. Ingestion of homegrown produce and fruit is not evaluated even though no method is described to preclude ingestion of homegrown produce and fruit. Residential land use is deemed unlikely based on an incorrect interpretation of a section of the California Public Resources Code which describes the zone of jurisdiction for the California Coastal Commission. CLP quality EBS data, which would help in the site characterization, is not included in the risk assessment. In short, we have no way of determining how the estimates of risk and hazard contained in this document differ from those which would be derived had not these differences in methodology been implemented.

We recommend that no risk management decisions be made using the estimates of risk and hazard contained in this RI Report. We further recommend that the report be revised in line with HERD comments in a second draft not a draft final document. An item by item response to these comments, without substantial changes in the risk calculations, will not be useful.

Given the removal action underway at Site 16 it does not seem useful to amend the Site 16 risk assessment until the removal action is completed.

Reviewed by: Michael J. Wade, Ph.D., DABT
Senior Toxicologist, HERD

cc: Michael J. Wade, Ph.D., DABT, Senior Toxicologist, OMF Liaison, HERD
Chuck Salocks, Ph.D., DABT, Staff Toxicologist, HERD

Ms. Sophia Serda, Ph.D.
U.S. EPA Region IX
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Cal/EPA

MEMORANDUM

Department of Toxic Substances Control

400 P Street, 4th Floor P.O. Box 806 Sacramento, CA 95812-0806

TO: Mary Rose Cassa
Office of Military Facilities
DTSC Region 2
700 Heinz Ave., Suite 300
Berkeley, CA 94710-2737

DATE: 27 March 98

Pete Wi Gove

James M. St Secretary Environme Protec

FROM: Michael O. Finch, RG
Geologic Services Unit
DTSC
301 Capitol Mall
P. O. Box 806
Sacramento, CA 95812-0806

SUBJECT: Review of Chapter 2, Basewide Site Description, of Draft RI Report for OU-1, Alameda Naval Air Station (Log No. 971284A).

INTRODUCTION

The Headquarters Geologic Services Unit (GSU) of the Department of Toxic Substances Control (DTSC) was requested to review Chapter 2 of the Draft Remedial Investigation (RI) Report for Operable Unit (OU) 1 at the Alameda Naval Air Station.

GENERAL COMMENTS

Although this segment of the RI Report appears comprehensive, it presents several major technical inconsistencies.

First, the draft Report disagrees with several published geologic reports including United States Geological Survey (USGS) Miscellaneous Geologic Investigation Map I-239, 1957, by D. H. Radbruch; and California Department of Water Resources (DWR) Phase 1 Water Well Survey for the Proposed Oakland Inner Harbor Deepening Project, 1982, by G. Newmarch.

Second, the lithologic units delineated in cross sections figures 2-3a through 2-5i: "Fill," "Bay Sediments," "Merritt Sand," "Upper San Antonio," and "Lower San Antonio" show no consistent basis for correlation in either the shown graphic log representations or within the text. Whether the units were delineated based on marker beds, fossil fauna or flora, radiometric dating, or other stratigraphic technique remains

Mary Rose Cassa
Alameda Naval Air Station

unknown. Based on the data given in the logs several different possible cross sections could be drawn. No data are provided in the Report to preclude wide-spread continuous sand strings connecting upper from lower water-bearing units at Alameda Island. In general, sand layers appear to connect both horizontally and vertically as expected in marine transgression and regression sequences.

DETAILED COMMENTS

1) Page 2-7 of the RI states that the Yerba Buena Mud appears to be a thick and continuous aquitard throughout the entire installation, and provides "...an effective hydraulic barrier between the SWBZ and the underlying Alameda Formation." The report presents little evidence to support this aquitard claim. To the contrary the borings show complex inter-fingering sand lenses and layers across the facility.

Recommendation: Provide supporting data including pump tests to substantiate the claim that the Yerba Buena Mud is an effective barrier to vertical contamination movement, or remove these statements from the RI.

2) On page 2-9 the RI states that the flow is predominantly in the horizontal direction at the installation. Evidence to support this claim is a one to two foot difference in hydraulic head between water-bearing strata and statements that typical conductivities for the silty clays are 10^{-5} cm/sec compared with 10^{-3} cm/sec for the sands. The report does not explain how these "typical" values were derived. I suspect laboratory permeabilities were used in selected core samples to estimate these values. Laboratory permeabilities are usually one to two orders of magnitude lower than field determined permeabilities. A one to two foot difference in hydraulic head (with resulting differences in ground water gradients) is a small difference that could easily reverse with climate, ground water extraction, and land use changes.

Recommendation: The RI should state how these typical conductivities were derived. If laboratory permeabilities were used this claim should be dropped. The differences in hydraulic head and gradient between water-bearing units should be reevaluated given changes in ground water pumping, land use, and climate. The report should note that predominate ground water flow does not necessarily preclude contaminate migration. Any

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"aquitards" are "leaky aquitards" at best given even a 10^{-5} cm/sec (silt) permeability. DWR in 1982 reported that shallow ground water was often used during the 1976-77 drought for landscape irrigation on Alameda Island. In 1982 chloride concentrations in the shallow ground water ranged from 6-39 ppm, making this water suitable for all irrigation uses. Given historic uses of shallow ground water during drought periods on Alameda Island the Report should reevaluate contaminant fate and transport under various scenarios.

3) Pages 2-22 and 2-23 refer to Title 22, Chapter 15 water quality requirements. The report may have intended to refer to Title 23 requirements which are the water board regulations.

Recommendation: The report author should check the intended reference and make corrections if necessary.

4) Despite the claims made in sections 2.7.3.1 et seq., historically shallow ground water has provided Alameda Island residents with usable irrigation water during times of drought as indicated by DWR in 1982. Although recent Alameda County well construction standards prohibit use of the shallow ground water, this regulation does not apply to already existing wells of which there are several on the island. The owners of these wells can, anytime at their discretion, decide to pump shallow ground water for whatever reason. All of the arguments made in the RI for "safe yields," what constitutes "beneficial use," and "marginal water quality" are moot if a well owner starts to pump. The RI should address worst case scenario conditions of people exposed to contamination from application of irrigation or industrial water from these shallow wells. The only other option would be for the Navy to persuade the well owners to properly decommission their shallow wells preventing possible human exposure to the shallow ground water.

Recommendation: The RI should address human and environmental exposure to the shallow ground water or recommend that the existing shallow wells on Alameda Island be decommissioned.

5) On page 2-43 the RI states that, "There is no connection between the Merritt Sand and the Alameda Formation." Radbruch, however, in his 1957 USGS Map cross section (Map I-239) shows the Merritt Sand in direct contact with the Alameda Formation. The complex "maze" of sand layers and lenses that are clearly

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Alameda Naval Air Station

displayed on the many cross sections in the RI make the possibility of no connection or possible contaminant pathway between the Merritt Sand and the Alameda Formation appear remote. More concrete data is needed (such as pump tests) to support such a claim.

Recommendation: The RI should either provide more concrete data, such as pump test results, to substantiate the claim of no connection between the Merritt Sand and the Alameda Formation or remove this statement from the report.

6) On Figure 2-2 of the RI the location of a former paleochannel is depicted across Alameda Island. RI cross section Figure 2-3c, however, shows the center of the former paleochannel about 1000 feet to the north of the location indicated in Figure 2-2. (Note: Only cross section Figure 2-3c was checked. All of the cross sections should agree with the paleochannel location map.) Radbruch (1957 as mentioned above) shows a paleochannel about 6000 feet to the east from the end of the paleochannel shown on Figure 2-2.

Recommendation: The RI should be corrected for the actual paleochannel location on Figure 2-2 and should reconcile with the data shown by Radbruch.

7) As discussed in the general comments above there is no apparent lithologic basis for the formations shown on all of the cross sections. Lithologic units are often divided within the same sand bed. Many of the units such as the Merritt Sand appear to be more continuous across the island than shown in the RI figures. Radbruch (1957 cross section) delineated a more continuous Merritt Sand in the subsurface across Alameda Island than shown in the RI cross sections.

Recommendation: Either the rational for delineating lithologic units should be provided or the RI cross sections should be re-drawn to reflect changes in sediments. If some other than a sediment basis was used to delineate the formations then the usefulness of labeling one unit a "water bearing zone" and another an "aquitard" comes into question. The RI should reconsider possible contaminant fate and transport based on actual sediments encountered and not unit names.

Mary Rose Cassa
Alameda Naval Air Station

CONCLUSIONS

The Navy should rethink the strategy of ignoring organic and metal contamination found in the upper water bearing zone near the Alameda Naval Air Station. The ultimate possible fate and transport of waters that exceed health and environmental safety standards should be used to calculate a worst case risk assessment exposure.

Please do not hesitate to telephone me at (916) 323-3378 if you should have any questions.

Tetra Tech EM Inc.

10670 White Rock Road, Suite 100 ◆ Rancho Cordova, CA 95670 ◆ (916) 852-8300 ◆ FAX (916) 852-0307

October 16, 2000

Mr. Lou Ocampo, PE
Remedial Project Manager
Naval Facilities Engineering Command
BRAC Operations, Southwest Division
1230 Columbia Street, Suite 1100
San Diego, California 92132-5190

Subject: **Various Correspondence from Regulatory Agencies for inclusion into the Administrative Record for the Fleet and Industrial Supply Center, Oakland Alameda Facility/Alameda Annex, or Alameda Point, Alameda, California CLEAN Contract No. N62474-94-D-7609, Contract Task Order No. 271**

Dear Mr. Ocampo:

Per your request enclosed is one copy of the following correspondence for your files:

- Draft Operable Unit (OU)-1 Remedial Investigation (RI) comments from United States Environmental Protection Agency (EPA), dated April 10, 1998.
- Draft OU-1 RI comments from Department of Toxic Substance Control (DTSC), dated April 15, 1998.
- Revised Draft OU-1 RI comments from DTSC, dated November 3, 1998.
- Revised Draft OU-1 RI comments from EPA, dated November 6, 1998.
- EPA Review of Draft Final Marsh Crust Feasibility Study for Alameda Annex and Alameda Naval Air Station dated February 7, 2000.
- DTSC comments on Draft Final Feasibility Study for the Marsh Crust and Groundwater at the Fleet and Industrial Supply Center, Oakland Alameda Facility/Alameda Annex and for the Marsh Crust and Former Subtidal Area at Alameda Point dated February 7, 2000.
- EPA comments on the Action Memorandum for Marsh Crust Time-Critical Removal Actions at East Housing Area dated March 14, 2000.
- EPA Review of Public Draft Record of Decision/Remedial Action Plan for Marsh Crust and Groundwater at Alameda Annex and Marsh Crust and Former Subtidal Area at Alameda Point dated July 19, 2000.

Six copies of each correspondence have been forwarded to Ms. Dianne Silva for inclusion into the administrative record files at Alameda Facility/Alameda Annex or Alameda Point.

If you have any questions, please call me at (916) 853-4512.

Sincerely,

Mark R. Reisig

Mark R. Reisig
Project Manager

Enclosure

cc: Ms. Diane Silva, Navy Information Repository (3 copies of each)
File

TC.0271.10613

TETRA TECH EM INC.

TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N62474-94-D-7609 Document Control No. TC . 0271 . 10613

TO: Mr. Richard Selby, Code 02R1
Contracting Officer
Naval Facilities Engineering Command
Southwest Division
1230 Columbia Street, Suite 1100
San Diego, CA 92132-5190

DATE: 10/16/00
CTO: 0271
LOCATION:
Alameda Annex, Alameda

FROM: Greg Swanson
Daniel Chow, Program Manager

DOCUMENT TITLE AND DATE:

Various Correspondence from Regulatory Agencies for inclusion into the Administrative Record for the Fleet and Industrial Supply Center, Oakland Alameda Facility/Alameda Annex, or Alameda Point, Alameda, California. Dated October 16, 2000 (These documents are forwarded to Ms. Diane Silva for inclusion into the Alameda Annex or Alameda Point information repository.)

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